

FOR NATIONAL PHASE SUBMISSION

2

CLAIM AMENDMENTS

WHAT IS CLAIMED IS:

1. **(Currently Amended)** ~~Piezo~~ A piezo actuator~~-(1)~~ for a fuel injection valve which is inserted under pre-stressing into an actuator housing, with a compensation element to compensate for the different thermally-induced changes in length in relation to the actuator housing being incorporated between the piezo actuator~~-(1)~~ and a top plate~~-(5)~~ of the actuator housing,

~~characterized in that, wherein~~

- the piezo actuator~~-(1)~~ is arranged within a tubular spring ~~-(3)~~,
- the compensating element is embodied as a compensating cylinder~~-(2)~~ arranged within an extension tube~~-(6)~~,
- the actuator housing comprises a sleeve~~-(3, 6)~~ consisting of the tubular spring~~-(3)~~ and the extension tube~~-(6)~~ fixed to it, the extension tube end of which is permanently connected to the top plate~~-(5)~~ and the tubular spring end of which, in exerting a defined pre-stressing on the parts ~~-(1, 7, 2)~~ arranged axially behind each other within the sleeve~~-(3, 6)~~, is permanently connected to a base plate ~~-(4)~~ of the actuator housing~~-(4, 3, 6, 5)~~.

2. **(Currently Amended)** ~~Piezo~~ A piezo actuator ~~in accordance with~~according to claim 1,
~~characterized in that wherein~~ the parts of the actuator housing ~~-(4, 3, 6, 5)~~ are made of steel.

FOR NATIONAL PHASE SUBMISSION

3

3. (Currently Amended) A piezo actuator according to claim 1,
~~wherein Piezo actuator in accordance with claim 1 or 2,~~
~~characterized in that~~ the parts of the actuator housing ~~(4, 3,~~
~~6, 5)~~ are welded to each other at their connecting points.

4. (Currently Amended) A piezo actuator according to claim 1,
~~wherein Piezo actuator in accordance with one of the claims 1~~
~~to 3,~~
~~characterized in that~~ the compensating cylinder ~~(2)~~ consists
of aluminum.

5. (Currently Amended) A piezo actuator according to claim 1,
~~wherein Piezo actuator in accordance with one of the claims 1~~
~~to 4,~~
~~characterized in that~~ a spacer ~~(7)~~ is arranged between piezo
actuator ~~(1)~~ and compensating cylinder ~~(2)~~.

6. (Currently Amended) A piezo actuator according to claim 1,
~~wherein Piezo actuator in accordance with one of the claims 1~~
~~to 5,~~
~~characterized in that~~ breakthroughs are made in the
circumference of the extension tube ~~(6)~~ in which a spring
plate ~~(8)~~ is mounted in each case so that, with an actuator
unit fitted, a heat transfer is produced from the compensating
cylinder ~~(2)~~ to a housing ~~(16)~~ of the injection valve.

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PATENT APPLICATION

FOR NATIONAL PHASE SUBMISSION

4

7. (Currently Amended) A piezo actuator according to claim 6,
wherein Piezo actuator in accordance with claim 6,
~~characterized in that~~ the spring plates ~~(8)~~ are made of the material copper, copper-beryllium or bronze in each case.

8. (Currently Amended) A piezo actuator according to claim 1,
wherein Piezo actuator in accordance with one of the claims 1 to 7,
~~characterized in that~~ a groove ~~(1)~~ for caulking the actuator unit in the valve housing is incorporated into the top plate ~~(5)~~ of the actuator housing ~~(4, 3, 6, 5)~~.

9. (Currently Amended) ~~Injection~~ An injection valve with a piezo actuator ~~(1)~~ according to ~~one of the claims 1 to 8.~~

FOR NATIONAL PHASE SUBMISSION

5

10. **(NEW)** A method for manufacturing a piezo actuator for a fuel injection valve comprising a compensation element to compensate for the different thermally-induced changes in length in relation to the actuator housing being incorporated between the piezo actuator and a top plate of the actuator housing, the method comprising the steps of:

- arranging the piezo actuator within a tubular spring,
- embodying the compensating element as a compensating cylinder arranged within an extension tube,
- fixing the extension tube to a sleeve consisting of the tubular spring, and
- connecting an extension tube end permanently to the top plate and connecting the tubular spring end permanently to a base plate of the actuator housing by exerting a defined pre-stressing on the parts arranged axially behind each other within the sleeve.

11. **(NEW)** A method according to claim 10, wherein the parts of the actuator housing are made of steel.

12. **(NEW)** A method according to claim 10, wherein the parts of the actuator housing are welded to each other at their connecting points.

FOR NATIONAL PHASE SUBMISSION

6

13. (NEW) A method according to claim 10,
wherein the compensating cylinder consists of aluminum.

14. (NEW) A method according to claim 10,
wherein a spacer is arranged between piezo actuator and
compensating cylinder.

15. (NEW) A method according to claim 10,
wherein breakthroughs are made in the circumference of
the extension tube in which a spring plate is mounted in each
case so that, with an actuator unit fitted, a heat transfer is
produced from the compensating cylinder to a housing of the
injection valve.

16. (NEW) A method according to claim 15,
wherein the spring plates are made of the material
copper, copper-beryllium or bronze in each case.

17. (NEW) A method according to claim 10,
wherein a groove for caulking the actuator unit in the
valve housing is incorporated into the top plate of the
actuator housing.